

## ABSTRACT

The device and method disclosed herein concern detecting, identifying, and or quantifying analytes, such as nucleic acids, with high resolution and fast response times using surface enhanced coherent anti-Stokes Raman spectroscopy. In certain embodiments of the invention, a small number molecular sample of the analyte **210** such as a nucleotide, passes through a microfluidic channel, microchannel, or nanochannel **185** and sample cell **175** that contains Raman-active surfaces, and is detected by surface enhanced, coherent anti-Stokes Raman spectroscopy (SECARS). Other embodiments of the invention concern an apparatus for analyte detection.